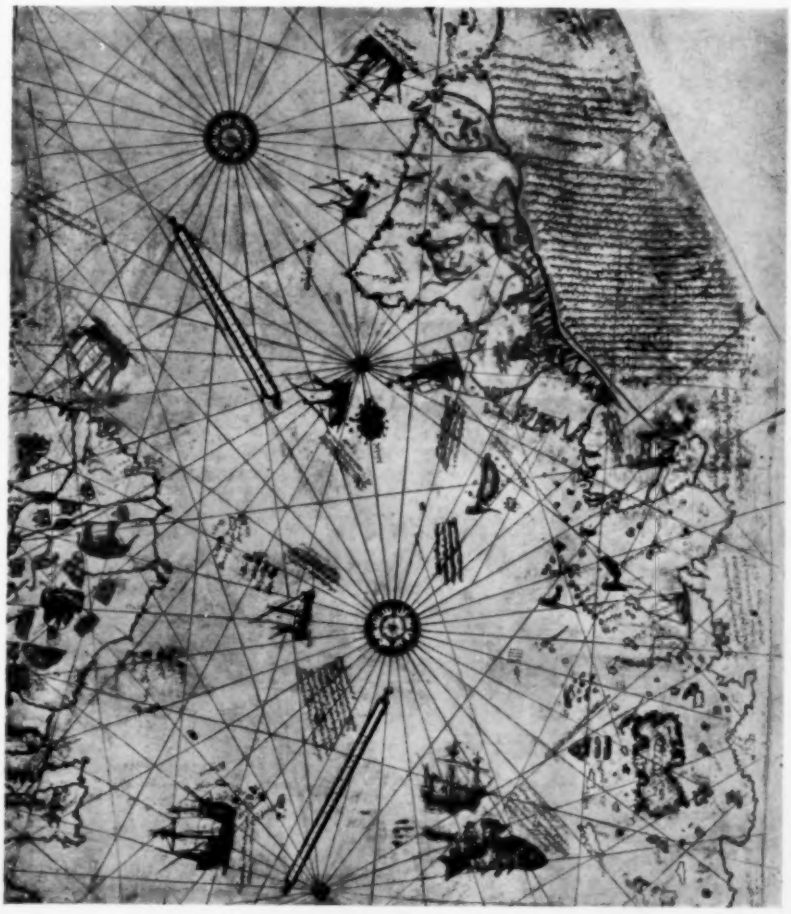
ICE
15¢

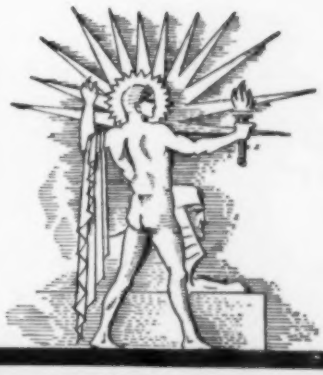
PERIODICAL ROOM
GENERAL LIBRARY
UNIV. OF MICH.

OCT 10 1933

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •





OCTOBER 7, 1933

New World as Columbus Saw It

See Page 234

A SCIENCE SERVICE PUBLICATION

SCIENCE NEWS LETTER

VOL. XXIV *No. 652*

The Weekly Summary of Current Science

Published by

SCIENCE SERVICE

The Institution for the Popularization of Science organized under the auspices of the National Academy of Sciences, the National Research Council and the American Association for the Advancement of Science.

Edited by WATSON DAVIS

Subscription rates—$5.00 a year postpaid; two years $7.00; 15 cents a copy. Ten or more copies to same address, 5 cents a copy. Back numbers more than six months old, 25 cents.

In requesting change of address, please give old as well as new address.

Advertising rates furnished on application.

Board of Trustees of Science Service

Honorary President, William E. Ritter, University of California. Representing the American Association for the Advancement of Science, J. McKeen Cattell, *President*, Editor, Science, Garrison, N. Y.; Burton E. Livingston, Johns Hopkins University, Baltimore, Md.; Raymond Pearl, Director, Institute for Biological Research, Johns Hopkins University, Baltimore, Md. Representing the National Academy of Sciences, W. H. Howell, *Vice-President and Chairman of Executive Committee*, Johns Hopkins University, Baltimore, Md.; R. A. Millikan, Director, Norman Bridge Laboratory of Physics, California Institute of Technology, Pasadena, Calif.; David White, Senior Geologist, U. S. Geological Survey. Representing National Research Council, Vernon Kellogg, Secretary Emeritus, National Research Council, Washington, D. C.; C. G. Abbot, Secretary, Smithsonian Institution, Washington, D. C.; Harrison E. Howe, Editor of Industrial and Engineering Chemistry. Representing Journalistic Profession, John H. Finley, Associate Editor, New York Times; Mark Sullivan, Writer, Washington, D. C.; Marlen E. Pew, Editor of Editor and Publisher, New York City. Representing E. W. Scripps Estate, Harry L. Smithton, *Treasurer*, Cincinnati, Ohio; Robert P. Scripps, Scripps-Howard Newspapers, West Chester, Ohio; Thomas L. Sidlo, Cleveland, Ohio.

Staff of Science Service

Director, Watson Davis, Staff writers: Frank Thone, Emily C. Davis, Jane Stafford, Marjorie Van de Water, J. W. Young; Librarian, Minna Gill; Sales and Advertising Manager, Hallie Jenkins.

Copyright, 1933, by Science Service, Inc. Republication of any portion of the SCIENCE NEWS LETTER is strictly prohibited since it is distributed for personal, school, club or library use only. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service, details and samples of which will gladly be sent on request.

Members of the American Association for the Advancement of Science have the privilege of subscribing to the SCIENCE NEWS LETTER at the reduced price of $3 per year. Application for this privilege should be accompanied by privilege card obtained from the Permanent Secretary, A. A. A. S., Smithsonian Institution Building, Washington, D. C.

Publication Office, 1930 Clifton Ave., Baltimore, Md., Editorial and Executive Office, Constitution Ave. at 21st St., N. W., Washington, D. C.

Address all communications to Washington, D. C. Cable address: Scienserve, Washington.

Entered as second class matter October 1, 1926, at the post-office at Baltimore Md., under the act of March 3, 1879. Established in mimeographed form March 13, 1922. Title registered as trade-mark, U. S. and Canadian Patent Offices.

DO YOU KNOW?

The climate of central Asia is getting drier, geographers report.

A hen requires almost half a pound of feed to produce one egg, it was found in recent tests of six breeds.

Lands in the United States today held by the Indians are somewhat larger in area than the State of New York.

On his very first American discovery voyage Columbus experienced one of the West Indian hurricanes which have since become famous.

The Smithsonian Institution is getting together a collection of the tools and other articles used in a village blacksmith's shop of the nineteenth century.

Efforts of German chemists to fight clothes moths with a new product containing sodium selenate have been abandoned, because the cost of the chemical proved too high to compete with other insecticides on the market.

A whale's tongue contains about eight per cent of the oil in its body.

The cause of appendicitis was discovered by two American doctors less than 50 years ago.

Some Georgia farmers who have pine lands are finding it profitable to collect the crude gum and to haul their own turpentine and rosin to market.

Cement-coated nails, used in the construction of wooden containers, have two to three times the holding power of uncoated nails.

When the first cotton spinning factories were established, about 1800, they employed many young children and working hours were from sunrise to sunset.

A new ruling from the Interior Department orders dealers in western national parks to sell no Indian goods except genuine handmade articles produced by Indians.

WITH THE SCIENCES THIS WEEK

ANTHROPOLOGY
How big was Peking Man's brain? p. 229. *The Skeletal Remains of Early Man—Ales Hrdlicka—Smithsonian Inst.*, 1930, $2.25.

ARCHAEOLOGY
Who practised "corpse nailing"? p. 232.

ASTRONOMY
How often does omega Centauri grow brighter? p. 232.

BOTANY
Are all our state flowers native Americans? p. 239.
What are native American grapes good for? p. 235.
What comes out of heated seeds? p. 239.

CHEMISTRY
How does rubber help when you call a taxi? p. 232. *Symposium on Rubber—Am. Soc. for Testing Materials*, 1932, $1.75.

ENGINEERING
What is an old French warship good for? p. 233.

ENTOMOLOGY
Are there Boy Scouts among bees? p. 233.

GENERAL SCIENCE
What is the new Science Advisory Board? p. 228.

GEOGRAPHY
Who called Columbus an infidel? p. 234.

HISTORY OF MEDICINE
Who is being honored in Indianapolis this week? p. 234.

ICHTHYOLOGY
Where do tarpon breed? p. 232.

METEOROLOGY
How long will your outdoor job hold out? p. 230.

PHYSICS
How do cosmic rays toughen us? p. 227.
What are the best atom-smashers? p. 228.

PLANT PATHOLOGY
Do cacti have tumors? p. 238.

PSYCHIATRY
What is likely to ail bookish students? p. 231.

PSYCHOLOGY
What is half a pair of twins? p. 230.

PUBLIC HEALTH
What happens to Mexicans when the red fly bites? p. 233.

PUBLIC SAFETY
For what does a tough gangster use a "female tonic" drug? p. 234.

RADIOLOGY
How can early effects of X-rays be detected? p. 228.
How do X-rays help in tuberculosis? p. 233.
What is the new long-exposure treatment for cancer? p. 232.

SEISMOLOGY
Where did California's latest earthquake originate? p. 233.

VETERINARY MEDICINE
What vitamins are good for "scary" dogs? p. 227. *About Your Dog—Robert S. Lemmon—Stokes*, 1928, $2.

ZOOLOGY
Who is going to peep into a bear's bedroom? p. 238.

These curiosity-arousing questions show at a glance the wide field of scientific activity from which this week's news comes. Book references in italic type are not sources of information of the article, but are references for further reading. Books cited can be supplied by Book Dept., Science News Letter, at publishers' prices, prepaid in the United States.

PHYSICS

Better Cancer Treatment May Result From Powerful X-Rays

Super-Radiations Will Affect Cancer Cells Leaving Normal Cells Unharmed Because of Immunity Built by Cosmic Rays

WHEN science is able to produce X-rays of 10,000,000 to 50,000,000 volts, these short wave radiations will pick out with more deadly aim the cancer cells and thus be more effective in the treatment of cancer than the X-rays and radium radiation now used.

This was predicted by Dr. Robert H. Millwee, roentgenologist of the Dallas, Tex., Methodist Hospital, at the American Congress of Radiology in Chicago, upon the basis of a theory as to how the normal, relatively old cells of the body have acquired resistance to X-rays and radium.

Cosmic rays which continually plunge through our bodies are credited by Dr. Millwee with developing a hardiness of the normal cells which allows them to go through a bombardment of X-rays without harm, while the cell "upstarts" that compose the dangerous cancerous growth are damaged because they have not developed this resistance.

Dr. Millwee studied the influence of the age of cells upon their resistance to X-rays and radium.

Resistance Developed

"It seems that since a plant or animal will become acclimated or accustomed to a change in physical surroundings, if the change be brought about slowly enough, that a like tolerance would be produced by short wave radiation, provided the radiation be applied in proper quantity and over a sufficient length of time," Dr. Millwee pointed out.

"There is a vast amount of experimental evidence to show that cells develop a resistance to radium and X-rays," he continued, citing research done by himself and other investigators along this line.

"One of the most convincing arguments in favor of the idea that cells remaining for a long period of time on earth, in an unchanged state, have developed resistance to radiation is the fact that, as a class, unicellular organisms are much more resistant to radium and X-rays than are the cells of multicellular organisms.

"If cells have developed a resistance to short wave radiation, then it is probably important that we know the type of radiation which has produced this resistance. Since cosmic rays furnish such a large part of the short wave radiation reaching the earth it is quite reasonable that cell resistance is created by these very short wave cosmic rays.

Gamma Ray Effect Different

"We have certain clinical evidence and some experimental evidence that the biologic effect of extremely short Gamma rays is different from that of X-rays now in general use or longer Gamma rays. If the biologic effect is different, then a resistance acquired by one probably does not confer a resistance to the others.

"Therefore," he concluded, "if normal cells have acquired a resistance to cosmic rays which the new cancer cell does not possess, then we may find the answer to the question of why the shorter Gamma rays of radium have a selective action on cancer cells, or seem clinically to produce the maximum effect upon cancer cells with the minimum injurious effect on normal cells, and we may find that X-rays produced by voltages of ten to fifty million may have even a more desirable selective action on cancer cells than our shorter Gamma rays of radium."

Baby X-Ray

The smallest X-ray tube built in this country, a new development of the General Electric X-Ray Corporation, was demonstrated before the Congress. The new device operates from an ordinary light socket, is shock-proof, and may be used in safety by the layman—a long-sought combination of virtues.

The small set was said to be capable of making photographs of the entire human body and of use in fluoroscopic examinations in industrial plants. Customs inspection of clothing and baggage, post office examination of suspicious packages and race track inspection of horses' ankles are suggested uses. The apparatus is expected to replace more cumbersome equipment now in use.

Science News Letter, October 7, 1933

VETERINARY MEDICINE

Fright Disease Cured By Vitamin A Feeding

INCREASING the amount of vitamin A in the diet cured dogs of hysteria, H. D. Walston of King's College, Cambridge, England, found.

This ailment, also known as "fright disease," has become increasingly common in both England and America during the last ten years. The afflicted dog,

DWARF AND GIANT

The smallest commercially useful X-ray tube built in this country is contrasted with a mammoth 800,000-volt bulb recently installed for cancer treatment at Mercy Hospital, Chicago. The baby tube is rated at 58,000 volts and uses ten milliamperes. Its designer, J. B. Wantz is pictured on the right.

previously healthy, gets fits of apparent terror followed by more or less depression. Encephalitis has been suggested as a possible cause of the symptoms.

Mr. Walston's investigations, however, indicate as the cause of the complaint vitamin A deficiency, together with proportionately too much of another dietary factor called E-substance, found in dog-biscuits and other cereals.

Fifty cases of dogs suffering from hysteria were investigated, reports Mr. Walston in a communication to *Nature*. Of these, all except one were fed on a diet consisting mostly of cereal; twenty-six of these, continuing on the same diet, remained hysterical, while twenty-eight, the diet of which was changed to contain more vitamin A, recovered.

Science News Letter, October 7, 1933

PHYSICS

Deutons Creating Neutrons Promise to Smash Atoms

Radium Definitely Superseded as Creator of Projectiles For Exploring Secrets of Hearts of Material Particles

TWO PARTICLES recently discovered by science, the neutron and the deuton, promise to play an important role in atomic disintegration as the result of experiments just made at the California Institute of Technology at Pasadena, Calif.

Radium has been definitely superseded as the most effective generator of neutrons, those neutral particles which since the discovery of their existence two years ago have assumed an increasingly important place in experimental physics. Recently, H. R. Crane, a graduate student, Dr. C. C. Lauritsen and Dr. A. Soltan, an international research fellow from Poland, using the large million-volt X-ray tube developed by Dr Lauritsen, showed that the hearts of helium atoms or helium ions could be speeded up sufficiently to knock neutrons out of beryllium atoms. In this this way they produced twice as many neutrons as any radioactive source ever did.

Now they have tried deutons, the hearts of the double-weight hydrogen atoms, as the projectiles flung by high voltage at various substances. They were astonished to find that deutons used instead of helium hearts release from beryllium five hundred times as many neutrons as ever before obtained.

Deuton is the name given to the nucleus of the hydrogen isotope of mass two. The heavy-weight water was sent to Pasadena by Prof. G. N. Lewis of the University of California to see whether the Pasadena workers could cause their deutons to shatter themselves against heavy atoms. They do not. But when propelled against the light beryllium atom they penetrate the nucleus and apparently turn it into boron. In its exuberance the newly born boron nucleus kicks out a neutron with ten million volts energy.

Elated over their results, the physicists tried the deutons on lithium. It yielded neutrons even more copiously than beryllium. Helium is the byproduct in this case.

With such powerful means of producing neutrons of varying energy it will be easy to disintegrate atoms in relatively large numbers. The neutron is the ideal tool for this purpose. It insinuates itself into any nucleus with great ease and then treacherously splits it open. The contriving physicist watches this scandal and gains much wisdom therefrom.

Science News Letter, October 7, 1933

RADIOLOGY

Blue Skin Reaction May Help Solve X-Ray Mystery

A NEW reaction to X-rays, discovered by Dr. J. C. Mottram, Director of the Research Laboratory at the Mount Vernon Cancer Hospital, London, may help to solve the long-standing mystery of what happens in living tissues after they have been X-rayed but before any recognizable changes occur. Dr. Mottram's research is described in *Nature*.

"If, during the afternoon the skin of a rat be exposed through a small hole in a lead screen to approximately a U. S. D. of X-rays, and immediately afterwards a solution of Pyrrol blue be inoculated into the circulation, then the next morning there will be seen," he says, "a blue mark on the skin precisely corresponding to the hole in the lead screen."

He thinks this indicates that the X-rayed capillary blood vessels have been altered so that the dye passes through them more readily than through normal capillaries.

The special importance of this observation lies in the fact that the reaction occurs within 24 hours after the application of the X-rays. Only three other instances of biological change within comparatively few hours after exposure to X-rays have as yet been known, and none of them are easy to determine.

"It is to be hoped," concludes Dr. Mottram, "that this new reaction with Pyrrol blue, when fully exploited, will elucidate some of the hidden changes which occur during the latent period."

Science News Letter, October 7, 1933

GENERAL SCIENCE

U. S. Science Advisory Board Answers Queries For Officials

PRESIDENT Roosevelt's Science Advisory Board now has six committees of experts at work on questions referred to it by governmental agencies, President Karl T. Compton, chairman of the board, has announced.

As the actual problems upon which cabinet officers and other officials have sought the advice of this Board are pressing and of a confidential nature, Dr. Compton did not discuss details.

"Three general types of problems are under consideration," Dr. Compton said. "The first are questions of proper organization, or functioning, or program of the scientific and technical services of the government on which the advice of the Board has been specifically requested.

"The second are similar matters which have otherwise come before the Board, and which need attention in order that

essential technical services shall not be impaired by economy, or unwise projects be supported, as may easily happen when the determining issues are obscure or highly technical.

"The third are basic considerations of the n ..re permanent policy of the government toward scientific work."

President Compton explained that the Board finds that the government definitely must operate certain technical services. It seems advisable to leave others entirely to private enterprise. There is also a rapidly increasing third class of services where the public welfare and future prosperity of the country will depend very much on the successful development of some method of cooperative attack by governmental and private agencies. It is the idea of the Board that there should be marshalled temporarily the best scientific talent of the country in order to solve these problems as they arise.

Interlocking contacts with other governmental advisory services are being established by the Board. It is realized that an effective attack on the great technical problems facing the government can not be made by any one group of experts alone, be it scientific, economic, social or business. Every problem, Dr. Compton explained, is being considered from all points of view so that the recommendation made to the government will be backed by all groups of qualified experts.

PEKING AND TRINIL

Similar in total volume, but quite different in type, are the brain casts of Peking Man (above) and Java Man (below).

ANTHROPOLOGY

Peking Man a Neandertaler, New Brain Cast Indicates

Dr. Eugene Dubois, Discoverer of Pithecanthropus, Says Sinanthropus Youth Had Very Small Brain

PEKING MAN had a brain distinctly human in type, showing a notable advance in development over the brain of *Pithecanthropus,* the Java Man discovered over forty years ago by Dr. Eugene Dubois. But the one brain cast it has been possible to make thus far indicates that the first-found Peking skull belonged to a young man with a small head.

"The adolescent *Sinanthropus* is a human male, belonging to the Neandertal group of mankind, the species *Homo neandertalensis,* maybe an interesting new race, with individually imperfectly developed and hence abnormally small brains," says Dr. Dubois.

These verdicts have been presented by Dr. Dubois himself, to the Royal Academy of Sciences in Amsterdam, after the noted anthropologist had made a long and careful comparative study of brain casts made in the Peking Man and Java Man skulls.

The total volume of the brain cast received by Dr. Dubois from Dr. Davidson Black, first student and describer of Peking Man, is 918 cubic centimeters. This is approximately the same size as the brain cast of Java Man.

The High Arch of Homo

In shape and anatomical development, the Peking Man's brain cast resembled the Neandertaler's—and even modern man's—much more than it did the brain cast of Java Man. Most notable was the relatively high-arched front portion, as compared with the almost flat-fronted brain of the Java Man. This arching of the front part of the brain is considered one of the most distinctly human characters found in brain architecture.

This presented a poser: here was a brain almost as small as that of the very primitive Java Man, showing the same basic form as that of advanced human species. But Dr. Dubois points out that the brains of modern "microcephals" show exactly the same peculiarity: they are subnormal in size but quite normal in general shape and structure. Hence he suggests that this particular individual Peking Man was an ancient "microcephal." He found further support for his opinion in certain peculiarities in the bones of the skull itself, which have their counterparts in the skulls of modern "microcephals."

The skull which yielded this interesting brain cast was that of a young male individual, perhaps fifteen or sixteen years old. It was most nearly whole when found, so that it was possible to prepare the cast with relatively little loss of time.

Second Skull Shattered

The second Peking Man skull, which appears to be that of a woman, was broken into many fragments, so that before a cast can be made in its brain-cavity it will be necessary to piece it together—a tedious and time-consuming task. It may be several years before the second brain cast will be ready for study.

The outcome of Dr. Dubois' study confirms the opinion expressed by Dr. Ales Hrdlicka of the U. S. National Museum when the first photographs of the Chinese skull were received in this country. At that time he told Science Service that the skull was without doubt of the Neandertaloid type. Several other American anthropologists, impressed by the strong resemblance of the photographs to known Neandertal skulls, offered similar opinions.

Dr. Hrdlicka does not think it necessary to conclude, as Dr. Dubois did, that the particular individual had an abnormally small brain, so that he might be classified as "microcephalic" and possibly have been an idiot. The Peking Man brain is small, admittedly. But Dr. Hrdlicka points out that in the Smithsonian Institution collections there are over thirty skulls of recent men, mostly Peruvian Indians, that are of this same order of size, yet none of them is classifiable as idiotic or otherwise pathological.

PSYCHOLOGY

Scientist Tells How it Feels To Be An Identical Twin

TWINS, and what they think about it, have always been subjects of considerable interest to the outsider. Dr. Alan Frank Guttmacher, a scientist who happens also to be an identical twin, devotes a considerable section of his just-published book, Life in the Making, to the matter. When it comes to confusion of twins, he relates an incident from his own experience that rivals the famous Mark Twain anecdote.

"I am an identical twin, and all my life my brother and I have had experiences, sometimes amusing, sometimes embarrassing, which testify to this likelihood for confusion," he writes. "People are constantly mistaking us for each other—and, in fact, on rare occasions we ourselves are not sure which is which.

"As recently as a year ago, my brother and I were vacationing at a small country hotel. As we were changing into swimming clothes, I asked my brother if he thought the river would be infested with sea-nettles. I was startled by complete silence, startled because my brother was standing directly before me and still he made no answer. At length, considerably irritated, I shouted: 'Are you deaf?' To my surprise a familiar voice came from a room across the hall, 'No, what's the excitement?' I had been addressing my own form reflected in the mirror."

Unlike a case reported by Galton, in which the twins were so much alike that their own children up to the age of five or six did not know them apart, the children of the Guttmacher twin brothers have always differentiated from the first, never mistaking the father for the uncle.

Galton also suggested that it would be interesting for twins who were closely alike to try how far dogs could distinguish them by scent.

"We have never carried out this experiment exactly, but none of the several dogs my brother and I have owned in our separate homes has ever shown any difficulty in distinguishing us. It is not, however, the same for cats, as our Persian cats seem occasionally to confuse us."

When identical twins are brought up in the same home their existences are so interlocked that they are never completely independent entities, Dr. Guttmacher reports. Each is merely half of two persons.

"In the case of my brother and myself, many memories return to attest this blending of personalities. I recall that, if one of us tore his clothes, we both had to go in and change. A casual remark made to a group of playfellows, that we had to go home and 'take our bath,' became a standing neighborhood joke.

"Identical twins are somewhat pathetic, since until they are well grown 'my' is a nonexistent word for them."

Science News Letter, October 7, 1933

METEOROLOGY

Work-Weather Map Guides Public Undertakings

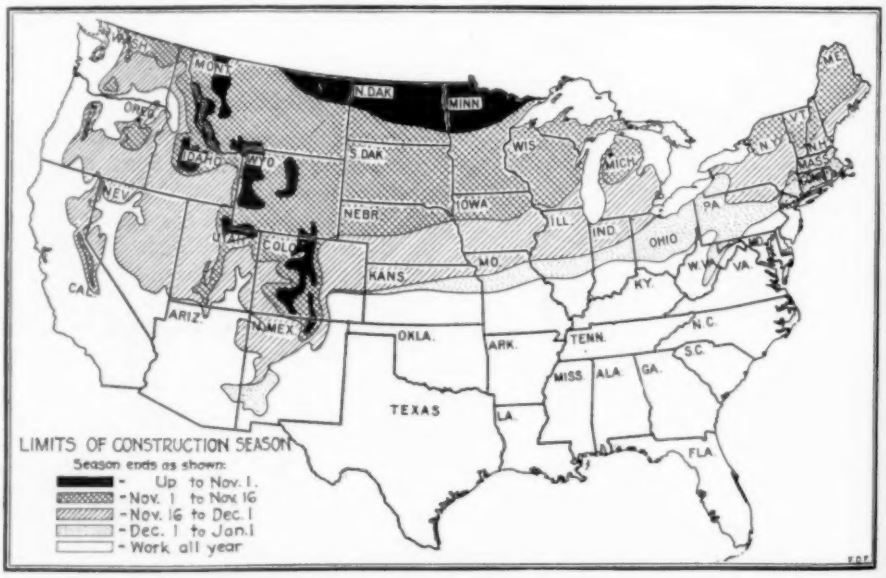
RACING with southward-moving winter, the Federal Emergency Administration of Public Works is laying special emphasis on getting men and jobs together in the North, where a lockout of most forms of outdoor labor is enforced by the weather. Secretary Harold L. Ickes, in his capacity as Federal Public Works Administrator, has had a special work-weather map compiled for the guidance of federal officials and members of the various State Advisory Boards.

The weather embargo on outdoor work begins as early as Nov. 1 in northern Minnesota and North Dakota, the map indicates. By Dec. 1 the no-work line has moved down until it crosses central Nebraska and Iowa, southern Wisconsin and central Michigan, and northern New York and New England. By the end of the year the freeze-out is complete above central Kansas and Missouri and the southern ends of the Ohio valley states. All-winter work is possible in Dixie, the Philadelphia area and most of New Jersey. In the West, Arizona, California, and the coast and valley areas of Washington and Oregon are similarly favored.

Projects that will make emergency jobs in these open-winter areas are not being shoved aside in favor of the North, Administrator Ickes said; but every effort should be put forth in winter-hampered areas to get a maximum of work under way before serious cold weather sets in.

Science News Letter, October 7, 1933

Whales are threatened with extermination, warns the Bureau of Fisheries, pointing out that the League of Nations treaty designed to save the whaling industry has not been sanctioned by enough countries to make it effective.



INTO THE TRENCHES BEFORE CHRISTMAS!

This work-weather map, compiled for the Federal Emergency Administration on Public Works, shows how long outdoor workers may expect to hold their jobs when winter comes.

PSYCHIATRY

Averting Disaster in College

Troubled Students Ask the Psychiatrist To Chart a Safe Course Through Many Kinds of Threatening Difficulties

By JANE STAFFORD

THE co-ed who has a date every night in the week is not the girl who needs advice in solving her problems. Nor is the athlete and fraternity leader, so busy with student activities that he fails to give enough time to his studies, in danger of serious failure, though both of these may cause their anxious parents many an uneasy moment.

Problems of sex and social relations do loom high in the list of student difficulties, but it is not the "flaming youth" element in the colleges that has serious trouble with these problems.

Strangely enough, the college girl who "hates men" and devotes herself exclusively to her roommate or some other girl needs to be rescued by the college psychiatrist from a much graver predicament than faces the co-ed of the proms and rumble-seat petting parties.

Likewise, the quiet boy who shuns girls and parties and leads a solitary life with no apparent outside distractions is the one who needs expert help to save him from failing both at college and throughout the rest of his life.

The story of one such lad, typical of hundreds of others, and the steps by which he was saved from the unhappy fate in store for him were told, at a recent meeting of psychiatrists, by Dr. Sidney Kinnear Smith of the psychiatric service of the University of California. Sex was a feature of this student's difficulties, though it was not the whole problem.

Reputed "High-Brow"

Although he had had the reputation of being a "high-brow," this boy was sent to the psychiatrist by the college authorities because he was failing miserably in his studies. Actually, he was suffering from unsuspected mental aberration which might have led him to an insane asylum.

He himself explained his failures in studies by saying that he "hated the whole business." That was at his first interview with the psychiatrist. Then it turned out that he was leading a very solitary life. He had made no friends among his college mates, did not go to parties and have dates in the usual college way, but deliberately avoided contacts with other people and particularly shunned girls. Instead of entering into the college life, he was living in a dream world of his own, peopled with creatures of his imagination. Occasionally he had hallucinations.

Eventually even his studies gave way to this internal world, taking second place in his attention and getting less and less of his time. Naturally he "hated the whole business," by which he meant the demands of university life, because it interfered with the dream world from which he got his emotional satisfaction.

However, he was still sane enough to appreciate that he was living an abnormal life.

Going back into his past history, the psychiatrist learned that since early childhood there had been friction between the boy and his family, particularly his father, who ridiculed him as a "high-brow" when he was in his teens.

Not Helped on Problems

Important problems which arose at this growing-up age were poorly handled and without the aid of a healthy point of view. As a result, he began to shun girls just at the age when he should have naturally sought their society, and all interest of that sort became to him a thing of filth and disgust.

This was the situation which had caused him to withdraw from the usual contacts of his age and to create for himself a world of day dreams to satisfy newly-developed needs and cravings.

The first efforts of the psychiatrists were to show this nineteen-year-old youth the steps by which he had built up this dream world.

They explained how his love of his mother made him jealous of his father and other members of the family and made him resent any attention given them by his mother. This led to the feeling of antagonism between himself and the others in the family and was the basic cause of the constant friction and conflict. He was shown how, to escape this unpleasant situation, he began to build up an imaginary world in which everything was just as he wished it to be.

"We tried to show this young man the basis for his attitude toward girls," Dr. Smith related, "and finally something as to his reason for shutting himself off from normal contacts. Supplementary to this procedure we worked out with him a reasonable but cautious plan for wider association."

As a result, the home relationship has improved. He has no more hallucinations and very little of the imagining and day dreaming which the psychiatrists term "phantasy production." Last semester, he secured a minor position on one of the university publications.

Sex Problems More Difficult

The problems of the students whose sexual adjustment is abnormal are not so easy to solve. Some of these involve only the student himself, sometimes his roommate or a close friend is involved. Formerly, as soon as a student was found involved in this latter type of difficulty, he or she was immediately dropped from the university. Now the psychiatrist tries to improve the situation, first by psychoanalysis to discover any underlying cause of the difficulty; then by teaching the student to have a better understanding of the problem and a different attitude toward his mates; and finally by getting him to take more interest in and devote more energy to athletics, studies, or some healthful hobby or outside activity.

Besides rescuing many students from dangerous situations of this type, the psychiatrists were able to save many more from being overwhelmed by other difficulties of college life.

Some of these students seek the psychiatrist of their own accord, to get help with their problems. Others are sent by the health department of the university. Here are a few of the reasons given for seeking advice from the psychiatrist:

Student No. 1 had influenza in 1925 and since then has been "nervous" and having occasional "dizzy spells." University work is of a poor grade.

Student No. 2 complains of a variety of pains without (*Turn to Page* 237)

RADIOLOGY

Cancerous Diseases Treated By Continuous Irradiation

CANCEROUS diseases are now being fought with continuous low-voltage doses of X-rays over the entire body as well as with 700,000 volt dosages for short periods. The comparatively new method of continuous irradiation was reported by Drs. Lloyd F. Craver and William S. MacComb of Memorial Hospital, New York City, to the American Congress of Radiology.

Patients being treated by this new method, called the Heublein method because it was first put into operation at Memorial Hospital by the late Arthur C. Heublein, lie in one of four beds in a specially constructed ward. For as long as 20 hours out of every 24, X-rays are sent into their bodies from a low voltage machine near the ceiling of the room. This is continued for a period varying from several days to three weeks.

"Experience with this method in 134 cases over a period of two years indicates that it is a valuable addition to the treatment of several radio-sensitive tumor processes, such as the leukemias, lymphosarcoma, Hodgkin's disease and multiple myeloma," reported Dr. Craver, who has been in active supervision of the work from the beginning.

"The results of the treatment in chronic lymphatic leukemia and pseudo-leukemia are, in our experience, superior to those obtained by local irradiation. It appears to be of only slight value in the treatment of radio-resistant tumors," he concluded.

Science News Letter, October 7, 1933

CHEMISTRY

Strong Rubber Compound Improves Telephones

A NEW RUBBER compound which will withstand moisture for many years under the most adverse weather conditions has been developed by research chemists working in the Bell Telephone Laboratories. The rubber is to be used to prevent the ready entrance of moisture into telephone transmitters installed in exposed locations and will improve reception in markets, taxi stations, police boxes and on harbor craft.

To keep moisture away from the thin aluminum diaphragm of the transmitter, a rubber membrane is interposed between the diaphragm and the mouthpiece. Such a membrane must be extremely thin and supple and it has been found cannot be thicker than about three thousandths of an inch. Rubber as thin as this has been commercially used for a long time, but its life at best has been from one to two years. The new rubber compound, tests have shown, does not deteriorate when placed for varying periods of time in a vessel of pure oxygen at a pressure of 300 pounds per square inch and a temperature of 158 degrees Fahrenheit.

When subjected to this test, poorly compounded rubber usually loses shape and deteriorates in less than one day.

Following the development of the rubber, engineers were called to invent a method of molding the compound in the necessary thinness and shape. A quantity of the plastic compound is inserted in the mold cavity, which is subjected to a pressure of several tons per square inch by a hydraulic press. Steam at 20 pounds per square inch is circulated about the mold. Under the pressure and heat the compound takes shape and becomes ready for assembly.

Science News Letter, October 7, 1933

ARCHAEOLOGY

Spaniards Nailed Corpses To Prevent Wandering

RECENT excavations in a medieval burying ground in Aguilar de Anguita, Spain, have produced new examples of one of the strangest burial customs ever practised by civilized men —that of driving long nails through arms, legs and other fleshy parts of corpses before burial. The graves have yielded ornaments and other objects that show beyond question that many of the dead were Christians, and in one part of the area, known traditionally as "Jews' Hill" finger rings with Hebrew inscriptions have been found, so that the custom was not confined to one religion.

The skeletons averaged a couple of dozen nails apiece, often with an especially long one driven through the skull.

Although the new-found nailed burials are of undoubted medieval age, earlier similar finds have shown the custom to be of ancient, probably prehistoric origin. It seems to go back to the old superstition that the dead can leave their graves to work evil upon the living, and was apparently an effort toward discouraging this unpleasant practice on the part of the departed.

Science News Letter, October 7, 1933

IN SCIEN

ICHTHYOLOGY

Florida's Tarpon May Be Native Born

FLORIDA'S famous game fish, the tarpon, may be a hundred-per-cent. native Floridian, and not an immigrant from West Indian waters, as commonly supposed. Evidence for the existence of a tarpon spawning ground in certain brackish water areas around Sanibel Island, Lee County, on the Gulf coast of Florida, has been sent to *Science* by two Florida women naturalists, Margaret Storey and Louise M. Perry.

They have found young tarpon in the Sanibel Island waters, and they add that fishermen of the locality state they can net tarpon in early stages of development in a certain brackish water pool on the island. They tried seining this pool, and captured infant fish whose scales indicated an age of one year.

Miss Storey and Miss Perry are now trying to find tarpon in earlier stages of development in the same locality.

Science News Letter, October 7, 1933

ASTRONOMY

Variable Star Flashes Sixteen Times a Day

CHANGING in brightness with a rapidity suggesting that of a flashing sign, a faint star in the cluster known as omega Centauri has just been discovered to be the shortest-period variable star yet found. Many stars change periodically in brightness, but generally the period of variation is measured in days or weeks. But this star, according to Dr. Van Gent of the Johannesburg station of the Yale University Observatory, varies about sixteen times a day.

Dr. Van Gent has found that it increases in brilliance more rapidly than it decreases. This is one of the characteristics of the important class of Cepheid variable stars, whose average brightness is less, the longer their period. When at maximum, Dr. Van Gent's star is a little more than twice as bright as when faintest.

Science News Letter, October 7, 1933

...E FIELDS

PUBLIC HEALTH

50,000 Mexican Indians Blinded by Red Fly Bite

THE BITE of a little red simulid fly has brought blindness to some 45,000 Indians in Chiapas and 5,000 in Oaxaca, according to the Mexican Health Department.

The life history of the parasite which the fly deposits in the blood of man is now known, but no good remedy to combat it has been worked out.

Because the Oaxaca region is small, Health Department brigades have chosen it as a field of experiment. The larvae of the flies are found among dead leaves along creek and river banks, and by cleaning these and burning the debris some impression has been made on the blindness epidemic.

Tumors appear on the heads of those affected, and these are being operated on by the wholesale by the sanitary brigades. This eventually cures the individual if the disease has not gone too far. The tumors are filled with long, thin, coiling organisms that can be seen under the microscope. Being phototropic, or light-loving, these make their way to the eyes. Indians with affected eyes are almost blind in the sun, but see better at night.

Science News Letter, October 7, 1933

RADIOLOGY

X-Rays Determine Lung Ventilating Efficiency

A METHOD of using X-rays to find just how efficiently a person's lungs are being ventilated was described by Dr. Walter W. Fray of Strong Memorial Hospital, Rochester, N. Y., at the American Congress of Radiology.

Apparently some patients suffering with tuberculosis and other lung diseases have more difficulty with breathing than would be expected from the amount of lung tissues that is seen in X-ray pictures to be affected, while in other cases the patients are able to breathe with little or no difficulty, in spite of a large diseased area. Lack of a standard of the ventilating efficiency of normal lungs has handicapped physicians in determining the extent of disability along these lines.

Dr. Strong and associates worked out a method of determining the normal pulmonary ventilation and then used the method in over 100 cases of various kinds of lung diseases. It proved to be useful in the following ways: in following the progress of chronic forms of pulmonary disease such as pulmonary emphysema, asthma, chronic bronchitis and bronchiectasis; in assaying the degree of disability in industrial disease such as silicosis for purposes of compensation; in identifying suitable cases of tuberculosis for treatment by collapsing part of the lungs; in determining the presence or extent of disturbed ventilation in cases of a certain kind of heart trouble; and, finally, in establishing both the diagnosis and progress of chronic pulmonary disease.

Science News Letter, October 7, 1933

SEISMOLOGY

Both Americas Get Quakes Monday Morning, Oct. 2

NOT FOR some days will the seismologists at Pasadena, Calif. be able to locate the exact center of the earthquake that aroused southern Californians early Monday morning, Oct. 2.

This shock was, however, capable of minor damage only and it compared in intensity with the largest aftershocks of the March 10 earthquake. It came from the same general direction as the March quake and the epicenter is estimated to be 20 miles or more from the Pasadena seismological station. Records are now being gathered from the automatic seismographs in various California localities that were set in action by the earth shock. The records will allow the precise epicenter determination.

The motion was felt in Los Angeles and vicinity for about five seconds, although the large amplitudes on the Pasadena records lasted several times as long.

Practically everyone near felt the quake because a bed is an excellent instrument for the purpose. Incidentally, it is also about the safest place on such occasions.

While the Los Angeles region was getting over its mild early Monday morning earthquake, a quake of greater severity shook the bottom of the Pacific off the coast near the Ecuador-Peru boundary.

Science News Letter, October 7, 1933

ENGINEERING

Old Ship to Make Ice From Temperature Differences

TAKING advantage of the fact that dismantled warships can be obtained for practically nothing, M. Georges Claude, well-known French chemist and inventor, has decided to try at his own expense a new and unusual method of obtaining power to run an ice-making plant, using for the purpose the temperature difference between surface and deep sea-water.

Using the Claude-Roucherot process, which was given a trial some years ago in Cuba, it should be possible to utilize economically a temperature difference of only 10 degrees Centigrade (18 degrees Fahrenheit).

A 10,000 ton ship, the "Tunisie," is now being reconditioned at Dunkerque, and transformed into a floating ice-manufacturing plant. It is expected that the work will be completed in ten months.

In an interview with a Science Service correspondent, M. Claude expressed his confidence in the success of this large scale experiment.

Introduction of large supplies of readily obtained refrigerating material by this method may lead to important changes in the life of large cities on the shores of tropical seas.

Science News Letter, October 7, 1933

ENTOMOLOGY

Bee Tows Drowning Comrade Ashore

RESCUE of a drowning bee by another bee is the unique tale told in the current issue of *Science* by Prof. H. R. Phalen of St. Stephen's College.

Prof. Phalen states that he was pulling weeds in his yard, near a bird bath, when he saw a bee floundering in the water, near the center of the bowl.

"In order to save himself he got over on his back and floated," Prof. Phalen continues, "but he could not make any headway toward shore and there was no wind to move him in any direction. Presently one of the several bees drinking around the shallow rim flew out over the center, came down close to the drowning bee, and, after the two had successfully locked their feet in some way, flew vigorously toward the shore and landed his hapless mate safely."

Science News Letter, October 7, 1933

GEOGRAPHY

Ancient Map Shows How World Looked to Columbus

Recently Discovered Chart Drawn by Turk From Information of Spanish Slave Who Sailed With Explorer

See Front Cover

STARTLED to find the name Columbus mentioned on an old Turkish map of the Atlantic Ocean, Paul Kahle has subjected the map to closest study, finding on it important new clues to the discovery of America.

In a report on his investigations, to appear in the forthcoming issue of the *Geographical Review*, official organ of the American Geographical Society, Dr. Kahle announces his belief that for the first time geographers have an idea of the appearance of the map which served to guide Columbus on his first voyage.

"We are now in a position even to reconstruct this map to a certain extent," he declares.

No maps indisputably drawn by Columbus himself are known to be in existence. The maps which he undoubtedly drew to show the King and Queen of Spain where lay the fine lands he had found in their honor have vanished. Nor have searches ever revealed any chart by which the navigator steered his course on the world's most famous voyages of discovery. Hence the importance of the Turkish map, which appears to be a direct copy of one of the lost maps by Columbus. By translating the long Arabic inscriptions on the map, Dr. Kahle found that it was made for the Sultan Selim I, in 1513, and it specifically states that new lands are included, as added lately by the "Genoese infidel Colon-bo."

Undetected For Centuries

In quaint language, the Turkish map maker told the story of Columbus' discovery voyages, and declared that he followed a map by Columbus himself in drawing these new lands. The source of his information was a Spanish slave who had traveled three times with Columbus on his long voyages.

The map made for the Sultan has lain undetected in the Seraglio at Constantinople for centuries. Its discovery has stimulated interest in seeking the original Columbus map which the mapmaker copied and which may have been preserved in Turkey. Some months ago the American Ambassador to Turkey requested a search. A high Turkish official sent a circular letter to directors of museums in the country and to scholars studying Turkish maritime history, asking their assistance. So far no trace of the original map has been reported.

Science News Letter, October 7, 1933

PUBLIC SAFETY

Once Popular Medicine Now Banned as Nuisance

VALERIAN, once a popular medicine that won the public confidence chiefly because of its bad taste and strong odor, now may be sold in New York City only under restrictions as rigid and strict as those applying to the narcotic drugs.

This is not because valerian is a dangerous medicine but because the offensive odor of the drug which may have won it popularity as a remedy has now made it a public nuisance. Valerian, once the chief constituent of "female tonics" and remedies for nervous and hysterical disorders, has come to be the chief constituent of "stink bombs."

The American Medical Association comments on the situation as follows: "The control of valerian is not induced by its medical uses but is instead to be a curb on racketeering, a system for making easy money, which may be said to be one of the prime developments of the last quarter century in which 'stink bombs' constitute a significant part of the materia racketeeria."

Science News Letter, October 7, 1933

HISTORY OF MEDICINE

Yellow Fever Conquerors To Be Honored

THE MEN who conquered yellow fever will be honored in a special Memorial Session when the American Public Health Association meets in Indianapolis the week of Oct. 9. As many as possible of the few still living among the brave men who volunteered as "human guinea pigs" in the historic experiments of the U. S. Army Yellow Fever Commission will be present at the banquet.

Maj. Walter Reed, chairman of the Army Commission, made the first announcement of his success in transmitting the disease by the mosquito at the meeting of the American Public Health Association in Indianapolis just thirty years ago. This discovery and demonstration by Reed and the other members of the Commission, that the disease was transmitted by a mosquito, has been called the most important contribution to science ever made by an Army surgeon and second only to the discovery of anesthesia in its benefits to the human race.

The Surgeon General of the U. S. Army, Major General R. U. Patterson, and General Frederick F. Russell, director of the International Health Division of the Rockefeller Foundation, will make the principal addresses. Members of the Association who were present at the historic meeting thirty years ago will be feted as well as the men still living who participated in the investigations.

Science News Letter, October 7, 1933

Three-fourths of the western range of big game in the West is now within National Forests.

DR. WALTER REED

BOTANY

The Fruits and Man

"A Classic of Science"

How Our Common Fruits Had a European Origin and The Difference if America Had Cradled Our Civilization

WERE THE FRUITS MADE FOR MAN, OR DID MAN MAKE THE FRUITS? By Asa Gray in the American Naturalist, Vol. VIII, Salem, Mass. Peabody Academy of Science, 1874. *This is an exact reprint of the original publication.*

THESE NEED not be taken as mutually exclusive propositions; for as "God helps those who help themselves," and man's work in this respect is mainly, if not wholly, in directing the course or tendency of Nature, so there is a just sense in which we may say "the art itself is Nature," by which the greatest triumphs of horticultural skill have been accomplished. Moreover I am not one of those naturalists who would have you believe that nothing which comes by degrees, and in the course of nature, is to be attributed to Divine power.

The answer I should give to the question, as we thus put it, is:

1. Some fruits were given to man as they are, and he has only gathered and consumed them. But these are all minor fruits, and such as have only lately come within the reach of civilized man, or are not thought worth his trouble. Huckleberries and cranberries, persimmons and papaws are examples, taken from this country. Whether even such fruits have or have not been under a course of improvement, irrespective of man, is another question.

2. Others have come to man full flavored, and nearly all that he has done has been to increase their size and abundance, or extend their season. Currants and gooseberries, raspberries and blackberries, chestnuts, and above all, strawberries, are of this class.

3. But most of the esteemed and important fruits, as well as the grains, have not so much been given to man as made by him. The gift outright was mainly plastic—raw material, time and opportunity. As to the cereal grains, it is only of the oat that we probably know the wild original; of wheat there has been an ingenious conjecture, partly, but insufficiently, confirmed by experiment; of the rest, no wild stock is known which is not most likely itself an escape from cultivation. Of some of them, such especially as maize, not only can no wild original be indicated, but in all probability none exists.

So of the staple fruits; of some the wild originals can be pretty well made out; of more, they are merely conjectural; of some they are quite unknown and perhaps long ago extinct.

To cite examples in confirmation or illustration of these points, to note how very ancient some of our varieties of common fruits are, and how very recent certain others—to consider how they have originated, with or without man's conscious agency, and how they have been perfected, diversified and preserved, mainly under man's direct care—would be to expand this note into an essay, and yet to say nothing with which pomologists are not familiar.

It would be curious to speculate as to what our pomology would have been if the civilization from which it, and we ourselves, have sprung had had its birthplace along the southern shores of our great lakes, the northern of the Gulf of Mexico, and the intervening Mississippi, instead of the Levant, Mesopotamia and the Nile, and our old world had been open to use as a new world less than four hundred years ago.

Seemingly, we should not have as great a variety of choice fruits as we have now, and they would mostly have been different, but probably neither scanty nor poor. In grapes, at least, we should have been gainers. Our five or six available species, of which we are now just beginning to know the capabilities, would have given us at least as many choice sorts and as wide a diversity as we now have of pears; while pears would be a recent acquisition, somewhat as our American grapes now are. Our apples would have been developed from *Pyrus coronaria*: and might have equalled anything we actually possess from *Pyrus Malus* in flavor, though perhaps not in variety, if it be true, as Karl Koch supposes, that the apples of the orchards are from three or four species. At least one of our wild hawthorns, *Crataegus tomentosa*, in some varieties, bears a large and delicately flavored fruit, evidently capable of increase in size; it might have been in the front rank of pomaceous fruits. In a smaller way our service-berry would have been turned to good account. Our plums would have been the progeny of the *Chicasa*, the beach plum, and our wild red and yellow *Prunus Americana*, which have already shown great capacity for improvement; our cherries might have been as well flavored but probably not as large as they now are. But instead of peaches and figs, we should be discussing manifold and most luscious varieties of persimmons and papaw, the former probably equal to the *kaki* just acquired from the far east. As to strawberries, gooseberries and currants, we should have lost nothing and gained something, as we possess several species besides the European types themselves; as to blackberries and raspberries we should have been better off than now, by the earlier

▼ RADIO ▲

The Fels Planetarium of the Franklin Institute

an address by

JAMES STOKLEY

Associate Director in charge of Astronomy for The Franklin Institute and Science Service Staff Writer on Astronomy.

To be given Friday, Oct. 13, at 3:00 p. m. Eastern Standard Time over stations of the Columbia Broadcasting System. Each week a prominent scientist speaks over the Columbia System under the auspices of Science Service.

development and diversification of our indigenous species. And we might have had all our finest strawberries a thousand or more years ago, these having come from our American types, *Fragaria Virginiana* with its varieties (which, as well as the old world *F. vesca,* occurs all across the continent), and *F. Chilensis* which ascends the Pacific coast to Oregon.

Then we should consider how much earlier our race, with an American birthplace, would have been in possession of tomatoes, of the pineapple, of the cherimoyer and the other custard apples, of the star-apples and other sapotaceous fruits, of chocolate, of Lima beans in all their varieties, of peanuts; not to speak of potatoes, sweet potatoes, and "Jerusalem" (that is, girasola or sunflower) artichokes: the last supplemented by our ground-nut (*Apios tuberosa*) would have been the first developed esculent tubers, and would probably have held their place in the first rank along with potatoes and sweet potatoes of later acquisition.

Among the causes and circumstances which have given to the fruits of temperate climates of the old world their preëminence, *opportunity* is one. How many potential fruits of value lie undeveloped in this country we know not, and now shall never know. They have lost their opportunity. Necessity, which is the mother of pomology as well as of other invention, has been fully supplied out of other accessible, and in some cases no doubt originally better, materials.

There are some, however, for which evidently "a good time is coming." Of these, our wild grapes are foremost. They have such a start already, and seedlings, whether from crosses or otherwise, can be produced and selected and reproduced in so short a space of time, that they will probably have achieved their position when the American Pomological Society holds its centennial celebration.

Blackberries, from *Rubus villosus,* are in similar case; and if due attention be paid to the low blackberry or dewberry, and to the sand blackberry of New Jersey and farther south, the foundation for a greater diversity of excellent sorts will be laid.

As to cranberries, already an important staple, increase of size and abundance of production are all that are to be expected. It is easier to bring about improvements in the direction of sweetness than in that of acidity. Huckleberries, also, have probably nearly reached their perfection unassisted.

A few wild fruits may be mentioned which manifestly have great capabilities, that may or may not be developed in the future. The leading instances in my mind are the persimmon and the papaw, —not the true papaw, of course, which we have in Florida, but the *Asimina* or western papaw, so called. Both persimmons and papaws are freely offering, from spontaneous seedlings, incipient choicer varieties to be selected from; both fruit when only a few years old, thereby accelerating the fixation of selected varieties into races; and both give fruits of types wholly distinct from any others we possess of temperate climates. He that has not tasted a *kaki* has no conception of the capabilities of the *Diospyros* genus. The custard apples of the West Indies give some idea of what might be made of our papaw, when ameliorated by cultivation and close selection from several generations. I have understood that one of the veteran pomologists of the country, Dr. Kirtland, of Ohio, a good while ago initiated a course of experiments upon the papaw in this regard; it would be well to know with what success, and whether the breeding and selection have been continued through successive generations.

Our American plums, already mentioned, have for many years been in some sort of cultivation, and have improved upon the wild forms; but I suppose they have not been systematically attended to. Their extreme liability to black-knot and other attacks renders them for the present unpromising.

Finally, if pomology includes nuts, there is a promising field uncultivated. Our wild chestnuts are sweeter than those of the old world; it would be well to try whether races might not be developed with the nuts as large as *marrons* or Spanish chestnuts, and without diminution of flavor. If we were not too easily satisfied with a mere choice among spontaneous hickory nuts, we might have much better and thinner shelled ones. Varying as they do excessively in the thickness of the shell and in the size and flavor of the kernel, they are inviting your attention, and promising to reward your care. The pecan is waiting to have the bitter matter between the shell and the kernel bred out; the butternuts and black walnuts to have their excess of oil turned into farinaceous and sugary matter, and their shells thinned and smoothed by continued good breeding; when they will much surpass the European walnut.

All this requires time, almost unlimited time; but it is not for those who are enjoying the fruits which it has taken thousands of years to perfect, to refrain from the good work which is to increase the enjoyments of far future generations.

Science News Letter, October 7, 1933

The British climbers who recently tried to reach the top of Mount Everest installed telephone connections in their camps high on the mountain, and received weather news by wireless from India.

While laboratory tests show that a tiny fraction of an ounce of mustard gas in the lungs will kill a man in a minute, in actual field use it takes about two tons of this gas to produce a single death.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912

Of SCIENCE NEWS LETTER published weekly at Baltimore, Md., for Oct. 1, 1933.

Washington } ss.
District of Columbia }

Before me, a Notary Public in and for the District of Columbia aforesaid, personally appeared Watson Davis, who, having been duly sworn according to law, deposes and says that he is the Editor of the SCIENCE NEWS LETTER and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Editor, Watson Davis, 21st and Constitution Ave., Washington, D. C.

2. That the owner is:

Science Service, Inc., 21st and Constitution Ave., Washington, D. C., a non-profit corporation without stock, operating as the Institution for the Popularization of Science.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

Watson Davis,
Editor.

Sworn to and subscribed before me this 27th day of Sept., 1933.

[SEAL]

Charles L. Wade.

(My commission expires March 26, 1938.)

PSYCHIATRY

Guidance of Psychiatrist Turns Student Failure Into Success

From Page 231

any apparent disease condition to account for them. There is insanity in the family and the student shows signs of having periods of mild depression. (Depression to the psychiatrist means something considerably more severe and serious than the discouragement you may experience at the end of a disappointing day or the low feeling that hits you the morning after a big party.)

Student No. 3 has many ideas of persecution, dating back to his childhood. He has been referred to the psychiatric department on account of numerous very unpleasant contacts with the doctors and nurses of the University Health Service.

Student No. 4 has periods of blushing and profuse sweating at casual contacts with other students.

Student No. 5 complains of a depression of three months' duration. He is failing in the last semester of his senior year. He is eating one meal a day and at the time first seen had only seventy-five cents.

While this last student was a senior, the majority coming for aid with their problems are freshmen and sophomores. Financial problems and actual nervous or mental disease, such as epilepsy, are among the difficulties the university students have to face.

Troubles Concern Other Students

Most of their troubles, however, arise over questions of their relations with other students, either of the same or the opposite sex. Sexual aspects of life appear to be given more consideration and speculation at the college age than at any other time. Worry over these problems causes sleepless nights and unhappy, wasted days. It leads to failure on the part of even the best-prepared students, the "sharks" of the high school graduating class.

The psychiatrists were able to see the greatest improvement from their treatment and advice in the cases of college boys and girls who were worried over sex or whose abnormal attitude toward it was leading them into trouble of a grave nature. But they were nearly as successful in helping those students who were unhappy and even on the way to nervous breakdown over their inability to fit themselves into the new life they found at college.

"This group of students is of necessity large, and probably larger in an institution like the University of California, than in a smaller school," Dr. Smith explained in a report to the American Psychiatric Association. "In this group are many students, mostly freshmen, who bring maladjustment problems to the University Health Service because of the friendly feeling between physician and student.

"We find that the boy who comes from a small high school is often overwhelmed by the environment of a large university. His home situation has been suddenly changed; even his food is different; he doesn't know the university geography, doesn't know what is expected of him, and doesn't know how to study. It takes him six months or a year to come to any comfortable and reasonable balance. Such students need supervision and bolstering to tide them over this period, and need primarily someone to talk to. They are lonesome and out of their depth. Assistance at this stage may well mean that the boy can go on to a well-rounded, healthy university life, instead of becoming discontented and shut-in.

"The procedure instituted for such boys varies. First, we attempt to see that they are in a proper boarding house, or if they are in fraternities, that the upper classmen of the house cooperate in

Notice

To Our Scientific Readers

SCIENCE SERVICE as the institution for the popularization of science must keep in touch with the progress of science throughout the world. By telegraph, cable and mail, our correspondents in various centers of research report the latest advances, supplementing the activities of our staff writer-scientists, each of whom gives particular attention to a science field in which he is qualified.

¶Wide-spread as is this rapprochement, in addition Science Service desires the cooperation of scientists throughout the world in bringing to our attention achievements, incidents and results of research that might otherwise be overlooked. We shall welcome the transmission of such information and we shall acknowledge appreciatively, making payment commensurate with its service to us when and if such material is found useful.

¶Photographs of pictorial value illustrating *new* developments in science will be particularly welcomed. They should be accompanied by explanatory text.

¶Address: The Director, Science Service, 21st and Constitution Ave., Washington, D. C.

handling the situation. Well-balanced programs of work, sleep and recreation are suggested. Some kind of recreational extracurricular activity is urged, even in their first year. These students are advised to go in for glee-club work, dramatics, or activity among students in the local churches, since most of the Berkeley churches have student pastors who cooperate closely with us in handling such problems. The statistics that have been compiled show that the bulk of these students are non-fraternity men."

Typical of this situation was the case of a nineteen-year-old boy who might be called Tom. He came to the psychiatrist complaining that he could not sleep.

Curing Insomnia

Tom had had an excellent school record and had been a "big man" of his year at the rural high school he had attended. He came to the university without enough money to see him through his course, so he got himself a job washing dishes for his room and board in a fraternity house. He was barely passing in his classes and the first mid-term examinations worried him greatly. He was given a "cinch" notice in chemistry. He didn't go out for any of the teams, and limited his exercise to the least possible amount of work in the gymnasium. He had not been to a single party or student gathering since coming to the university, and did not know more than twenty-five students on the campus, and not any of them well.

Feeling that he was out of his depth he began looking around for help and so came to the psychiatrist. The first thing that was done to arrange a change of work, so that he could meet other students at meal times and gain more acquaintances in that way.

Next he was put in contact with an understanding member of the faculty in the department in which he expected to major. He was given a note to the student pastor of his church affiliation.

Then he was helped to get a minor part in one of the university dramatic productions.

Finally, he was given advice and help in planning for himself a well-balanced program of study, exercise, food and recreation. In this way Tom was helped to find friends and a place for himself in the complicated university life.

Tom's problem was apparent, even to himself, and the treatment consisted largely in practical advice and bolstering of his self-esteem. The causes of some of the other students' difficulties were not so easy to find, and required more elaborate psychiatric treatment.

This article was edited from manuscript prepared by Science Service for use in illustrated newspaper magazines. Copyright, 1933, by EveryWeek Magazine and Science Service.

Science News Letter, October 7, 1933

PLANT PATHOLOGY

Giant Cactus Afflicted With Plant Tumors

THE SOUTHWEST'S giant tree cactus, or sahuaro, is susceptible to crown gall, a tumorous growth caused by bacteria, that afflicts many species of plants. Some of the growths on the cacti become very large, Prof. J. G. Brown and M. M. Evans of the University of Arizona, have reported to *Science*. One, found attached to the root of a huge cactus by a short stalk, had a diameter of ten inches and weighed eight and one-half pounds.

The discovery of these gall-afflicted cacti in areas far from any human cultivation, present or past, is taken by Prof. Brown as evidence against the theory that crown gall was introduced by pioneer Spanish missionaries.

Science News Letter, October 7, 1933

ZOOLOGY

Scientists to Probe Private Life of Hibernating Bear

THE PRIVATE life of a black bear during the period of hibernation is to be the object of study next winter by Frank Childs, district ranger of the Old Faithful District of Yellowstone National Park, with the assistance of Ranger Ed O'Donnell.

Mr. Childs says one of the favorite questions of Yellowstone visitors is "What do the bears do in the winter?" So he plans to lure a yearling bear into an artificial den in which, like the goldfish of publicity fame, he will be under observation. The hibernating period in the Yellowstone usually is from November to March.

To make possible this study, Ranger Childs is burying a 50-gallon barrel in the ground, putting straw and hay in it to make an inviting bed, and completely closing it except for a den leading into the barrel. Into this the yearling black bear will be enticed.

From the top of the barrel nearest the surface an oblong slit has been cut which will be accessible from the surface. Throughout the winter Ranger Childs plans to make regular trips to the artificial bear den to observe his sleeping protegé. He believes that in this way he will get material regarding bears in their native state which can not be obtained from a study of the hibernating habits of bears in captivity.

Ranger Childs also has rigged up two smaller barrels in similar fashion for the prospective use of a male and a female marmot so that the hibernating habits of these animals also may be studied. He used two barrels as he says is not sure that Mrs. Woodchuck allows company during the winter.

Science News Letter, October 7, 1933

CONVENIENCE COUPON

for New or Renewal Subscription to Science News Letter

Send this coupon to Washington while you are thinking of it.

Science News Letter,
21st and Constitution Avenue,
Washington, D. C.

Please { start / renew } my subscription to SCIENCE NEWS LETTER. I am enclosing remittance as checked: ☐ 2 years, $7 ☐ 1 year, $5

Name .....
Street Address .....
City and State .....

If this subscription is a renewal, check here . . . .

NATURE RAMBLINGS
by Frank Thone

BOTANY

Exotics as State Flowers

MANY OF OUR states have chosen as their official floral emblems plants that are not native to this country at all.

The *Journal of the New York Botanical Garden* has listed all the state flowers of the United States and its territories, and a survey of the list shows that twelve of them, representing an even fourth of the states, are flowers from foreign lands. Yet it would not do to condemn them for that reason, for these flowers are foreigners only as much as we ourselves are: they were transplanted from the European homelands of our forefathers; if they did not come in the Mayflower they certainly followed close upon the heels of the Pilgrims.

Some of these alien state flowers have a claim based upon their usefulness or value as well as their beauty. Such for example are the apple blossom, chosen by Michigan and Arkansas, and the peach, Delaware's state flower. Both these trees are native to Asia, and were cultivated in Europe for many centuries before America was discovered. Florida's orange also is Asiatic, and came to this country by way of southern Europe. Vermont, populated by practical Yankees, chose the red clover of its hayfields, a plant of European origin.

Other flowers do not have this economic appeal, but are old-time favorites that have lived long in our ancestral American gardens, or have even made their way into the wild plant population of the countryside. Most conspicuous among such cases, probably, is the Cherokee rose, famous as Georgia's state flower. Although a native of China, it has become so thoroughly Americanized that it has even adopted an Indian name. It was naturalized in Georgia so early that its first formal botanical description, a hundred years ago, was from specimens collected in that state, and not in its native land.

New York chose simply "the rose," presumably the cultivated double flower which is a hybrid between European and Asiatic roses. Iowa and North Dakota have also chosen roses as their state flowers, but they definitely specify the native wild roses of their prairies.

New Hampshire has shown that practical New Englanders can be a bit sentimental, too, by making the Old-World purple lilac their state emblem. Another old-fashioned flower was chosen by Indiana, the zinnia. This, unlike most of the other exotic species, is native to the New World, being a Mexican species. Ohio has the red carnation, favorite of the martyred President McKinley.

North Carolina's flower is a weed, the ox-eye daisy, native of Europe. Maryland also chose a flower often classed as a weed, the black-eyed Susan. This plant is a native American species, but is not native to Maryland, having been introduced from its home prairies of the West.

Science News Letter, October 7, 1933

BOTANY

Heated Seeds Produce Freaks

EVOLUTION by jumps, or mutation, can be brought about not only by the action of radium and X-rays upon seeds and eggs, but also by the prolonged exposure of seeds to high temperature.

Prof. M. Navashin, together with P. Shkvarnikov of the Timiriazev Biological Institute in Moscow, describe in *Nature* how seeds were enclosed in a closed bottle, kept for twenty days or more at a temperature of 131 degrees Fahrenheit and afterwards allowed to germinate.

Most of the seedlings produced were abnormal, the development of both roots and leaves being affected, and many did not survive. A considerable number of the surviving young plants displayed various abnormalities of leaf shape. A microscopic examination of the root tips showed that the chromosomes—minute rod-like bodies believed to be responsible for the inheritance of characters in both plants and animals—had been badly disarranged from their normal positions.

Science News Letter, October 7, 1933

Science News Letter

announces as its

FALL BOOK NUMBER

the issue of

October 21

ONE OF our most important duties, as we see it, is to keep our readers promptly informed, week by week, of the best new science books. This purpose is emphasized now, at the fall season when many good books are being published, by SCIENCE NEWS LETTER'S FALL BOOK NUMBER.

You remember the Spring Book Number issued last April. You will not want to miss the coming FALL BOOK NUMBER, the issue of October 21.

If your subscription is near its expiration date, fill in and mail now the renewal blank on the opposite page. Make sure that Science News Letter's FALL BOOK NUMBER reaches you without delay.

•First Glances at New Books

Medical History

THE GREAT DOCTORS, A BIOGRAPHICAL HISTORY OF MEDICINE—Henry E. Sigerist—*Norton*, 436 p., $4. This English translation by Eden and Cedar Paul appears simultaneously with the second edition. Dr. Sigerist tells these tales of great physicians with his usual skill. Besides giving the familiar stories from Hippocrates to Pasteur, with an added chapter on Osler for this edition, he has included biographies of many great doctors of the past whose very names will be new to the majority of lay readers. The book is enhanced by many excellent illustrations.

Science News Letter, October 7, 1933

Mechanical Engineering

AIR CONDITIONING—James A. Moyer and Raymond U. Fittz—*McGraw-Hill*, 390 p., $4. The technique of regulating the temperature and humidity of indoor air, especially in public buildings and industrial plants, is an essentially new development. This comprehensive treatise discusses the principles and applications of this newest of American industries.

Science News Letter, October 7, 1933

Language

SPANISH-ENGLISH—ENGLISH-SPANISH DICTIONARY, 888 p., FRENCH-ENGLISH—ENGLISH-FRENCH DICTIONARY, 628 p., ENGLISH-ITALIAN—ITALIAN-ENGLISH DICTIONARY, 526 p., LATIN-ENGLISH — ENGLISH-LATIN DICTIONARY, 876 p., GERMAN-ENGLISH—ENGLISH-GERMAN DICTIONARY 595 p., $1 per volume; ENGLISH DICTIONARY, 618 p., 75c, *D. Appleton*. These pocket dictionaries of British origin really can be carried in the pocket and yet they contain such a large number of words that they are useful.

Science News Letter, October 7, 1933

Radio

1933 OFFICIAL AUTO-RADIO SERVICE MANUAL—Edited by Hugo Gernsback and Robert Hertzberg—*Gernsback*, 200 p., $2.50. Detailed descriptions and installation diagrams of all leading automobile radio receivers. Should be useful to service men.

Science News Letter, October 7, 1933

Philology—Archaeology

ARCHIVES FROM ERECH, NEO-BABYLONIAN AND PERSIAN PERIODS—Raymond Philip Dougherty—*Yale Univ. Press*, 70 p., 65 pl., $5. This is volume two of the Goucher College Cuneiform Inscriptions. There are a thousand Babylonian texts in the fine Goucher collection from the temple of Erech. Over 400 are published here in the form of autographed copies, so that Assyriologists may conveniently study them. Some typical inscriptions are also translated with explanatory notes.

Science News Letter, October 7, 1933

Geology

EARTH-LORE—S. J. Shand—*Murby, London*, 134 p., 5s. Subtitled "Geology without jargon," this compact little book is exactly that. In language untechnical yet dignified, it presents the main outlines of modern dynamic geology, together with some of its still unsolved problems, so clearly that even he who runs about the earth in a fast motor car may still read.

Science News Letter, October 7, 1933

Mining

POTASH—B. L. Johnson—*Govt. Print. Off.*, 78 p., 10c. This publication, issued as an Economic Paper of the Bureau of Mines, gives in brief compass the principal facts about present world uses and production of this essential fertilizer mineral.

Science News Letter, October 7, 1933

Economics

SURVEY OF THE WHEAT SITUATION, APRIL TO AUGUST, 1933—*Food Research Institute, Stanford University*, 37 p., 50c. This issue of Wheat Studies of the Food Research Institute is of especial interest, in that it records the balloon-like rise—and descent—of wheat prices during the spring and summer of 1933.

Science News Letter, October 7, 1933

Economics—Political Science

NRA, THE NEW DEAL FOR BUSINESS AND INDUSTRY—Compiled for The John Crerar Library by Jerome K. Wilcox—*American Library Association*, 78 p., 75c. A bibliography, May-August, 1933, together with list of official publications of other new governmental agencies.

Science News Letter, October 7, 1933

Zoology

CAVE LIFE OF KENTUCKY—Vernon Bailey—*University Press, Notre Dame, Ind.*, 256 p., $1.25. This book is more comprehensive than its title indicates: it treats of the animal life of the surface in the Mammoth Cave neighborhood, as well as of the strictly cave-inhabiting creatures. It also discusses animals that lived in the region in primeval days, but are gone now, like the bison and the wapiti. There is an extensive chapter on the birds by Florence Merriam Bailey, and one on the invertebrates by Leonard Giovannoli.

Science News Letter, October 7, 1933

Nutrition

FOOD, NUTRITION AND HEALTH—E. V. McCollum and J. Ernestine Becker—*Authors, Baltimore, Md.*, 146 p., $1.50. The third edition of this book, which has just been rewritten, appears at a time when the layman seems to need more than ever a convenient source of accurate information on what to eat. The authors are recognized authorities on the subject. The material is presented briefly, clearly, and in a way to make it of practical help to the reader, whether he is worried over his weight and what to do about it or perplexed at finding vitamins thrust at him in everything he puts in his mouth from cigarettes to cough drops.

Science News Letter, October 7, 1933

Political Science

THE ATTEMPT TO DEFINE WAR—Clyde Eagleton—*Carnegie Endowment for International Peace*, 287 p., No. 291 of International Conciliation, 25c per year, 5c single copies.

Science News Letter, October 7, 1933

Bacteriology

AN INTRODUCTION TO LABORATORY TECHNIQUE IN BACTERIOLOGY—Max Levine—*Macmillan*, 289 p., $1.75. Second, revised edition.

Science News Letter, October 7, 1933

Engineering

PROCEEDINGS OF THE TWENTY-FIFTH ANNUAL CONVENTION—*Southern Gas Association*, 263 p., $3.

Science News Letter, October 7, 1933

Science News Letter will secure for its subscribers any book or magazine in print which was published in the United States. Send check or money order to cover regular retail price ($5 if price is unknown, change to be remitted) and we will pay postage in the U. S. When publications are free, send 10c for handling. Address: Book Dept., Science News Letter, 21st and Constitution Ave., Washington, D. C.